IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	N. Nishiyama et al.	: Art Unit:
Serial No.:	To Be Assigned	: Examiner:
Filed:	Herewith	:
FOR:	AN ELECTRIC VEHICLE USING A MOTOR	:

CONTINUATION APPLICATION OF:

Applicant:	N. Nishiyama et al.	: Art Unit: 2834
Serial No.:	09/544,065	: Examiner: B. Mullins
Filed:	April 6, 2000	:
FOR:	AN ELECTRIC VEHICLE USING A MOTOR	:

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231
S I R :

Prior to examination, please amend the above application as follows:

IN THE SPECIFICATION

Please delete the paragraph at page 1, line 3 and replace with the following:

This application is a Continuation Application of U.S. Serial No. 09/544,065 filed April 6, 2000 which is a Continuation-In-Part Application of U.S. Serial No. 08/945,460, filed February 2, 1998, which is a U.S. National Phase Application of PCT International Application No. PCT/JP97/00489.

Please replace the paragraph beginning at page 9, line 5 with the following:

In this way, the stator 2 is formed by combining plural core elements 5. Hence, instead of turning the winding around the stator 2, the stator 2 can be formed after turning the winding around the core element 5. Thus, by turning the winding around the core element 5 before forming the stator, since the winding is

turned in every core element 5, single winding (concentrated winding) may be formed easily. That is, as shown in Fig. 4, when turning the winding, there is no disturbing position for winding at the side surface of the teeth 7. As a result, the winding port of the turning device rotates about the teeth 7, so that an arrangement winding may be formed through an insulating film 24. Moreover, the turning precision of the winding 40 may be enhanced, and the arrangement winding may be formed easily.

Please replace the paragraph beginning at page 11, line 24 with the following:

The teeth confronting surface 14a of the permanent magnet 14 is linear. The distance between the teeth confronting surface 14a and the outer circumference of the rotor 13 is wider in the middle part than at the end part of the permanent magnet 14. Thus, in the outer circumference of the rotor 13, which includes circumference portions which pass magnetic flux at different levels, it is possible to produce an inductance difference between the q-axis inductance and d-axis inductance, so that it is possible to rotate and drive by making use of reluctance torque. Incidentally, the shape of the permanent magnet 14 may be a shape projecting in the middle portion toward the center of the rotor 13.

Please delete page 30.

IN THE DRAWINGS:

Please delete page "9/9" of the drawings, also labeled as "Reference Numerals" in its entirety.

IN THE CLAIMS

Please cancel claims 2, and 5 through 24.

Please add new claims 25 and 26.

Please replace claims 1, 3, and 4, with the following amended claims:

1. (As Amended) An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle,

a power supply unit for feeding electric power to said drive unit,

wherein said drive unit includes a motor,

said motor includes a stator core, said stator core has 3n teeth, where n is a natural number, a concentrated winding applied over each tooth part of said teeth, and

a rotor including 2n permanent magnets.

3. (As Amended) An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle, and

a power supply unit for feeding electric power to said drive unit,

wherein said drive unit includes a motor,

said motor includes a stator core and said stator core has 3n teeth where n is a natural number,

a concentrated winding applied over each tooth part of said teeth, and

a rotor including a plurality of 2n permanent magnets,

said plurality of 2n permanent magnets are arranged around a shaft of said motor,

at least one of said plurality of 2n permanent magnets includes a magnet forward portion and a magnet backward portion, and

wherein said magnet forward portion is angled from said stator core towards said shaft such that a first end of said magnet forward position is closer to said stator core than a second end of said magnet forward portion, said magnet backward portion is angled from said stator core towards said shaft such that a second end of said magnet backward portion is closer to said stator core than a first end of said magnet backward portion, said second end of said magnet forward portion being coupled to said first end of said magnet backward portion.

4. (As Amended) An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle, and

a portion supply unit for feeding electric power to said drive unit,

wherein said drive element includes a motor,

said motor includes a stator core and said stator core has 3n teeth where n is a natural number, a concentrated winding applied over each tooth part of said teeth, and

a rotor including a plurality of 2n permanent magnets,

said plurality of permanent magnets are arranged around a shaft of said motor and;

at least one of said plurality of permanent magnets has a side which is angled from said stator core towards said shaft.

Please add new claims 25 and 26 as follows:

25. (Newly Added) An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle,

a power supply unit for feeding electric power to said drive unit,

wherein said drive unit includes a motor and an engine,

said motor includes a stator core and said stator core has 3n teeth where n is a natural number, a concentrated winding applied over each tooth part of said teeth; and

a rotor including a plurality of 2n permanent magnets.

26. (Newly Added) An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle,

a power supply unit for feeding electric power to said drive unit,

wherein said drive unit includes a motor and an engine,

said motor includes a stator core and said stator core has 3n teeth where n is a natural number, a concentrated winding applied over each tooth part of said teeth,

a rotor including a plurality of 2n permanent magnets, and

a first outer periphery portion of said rotor if of a different shape than a second outer periphery portion of said rotor.

Respectfully submitted,

Lawrence E. Ashery, Reg. No. 34,515
Attorney for Applicants

Enclosures: Version with Markings to Show Changes Made
Dated: November 27, 2001
Suite 301, One Westlakes, Berwyn
P.O. Box 980, Valley Forge, PA 19482-0980 (610) 407-0700
The Assistant Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. **18-0350** of any fees associated with this communication.

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I hereby certify that this paper and fee are being deposited, under 37 C.F.R. § 1.10 and with sufficient postage, using the "Express Mail Post Office to Addressee" service of the United States Postal Service on the date indicated above and that the deposit is addressed to the U.S. Patent and Trademark Office, P.O. Box 2327, Arlington, VA 22202.

Kathleen Libby

Kathleen Libby

VERSION WITH MARKINGS SHOWING CHANGES MADE IN THE SPECIFICATION

At page 1, line 3:

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At page 9, line 5:

In this way, the stator 2 is formed by combining plural core elements 5. Hence, instead of turning the winding around the stator 2, the stator 2 can be formed after turning the winding around the core element 5. Thus, by [winding in the state of core element 5] turning the winding around the core element 5 before forming the stator, since the winding is turned in every core element 5, single winding (concentrated winding) may be formed easily. That is, as shown in Fig. 4, when turning the winding, there is no disturbing position for winding at the side surface of the teeth 7. As a result, the winding port of the turning device rotates about the teeth 7, so that an arrangement winding may be formed through an insulating film 24. Moreover, the turning precision of the winding 40 may be enhanced, and the arrangement winding may be formed easily.

At page 11, line 24:

The teeth confronting surface 14a of the permanent magnet 14 is linear. The distance between the teeth confronting surface 14a and the outer circumference of the rotor 13 is wider in the middle part than at the end part of the permanent magnet 14. Thus, in the outer circumference of the rotor 13, [having the easily passing portion and hardly passing portion of magnetic flux] which includes circumference portions which pass magnetic flux at different levels, it is

possible to produce an inductance difference between the q-axis inductance and d-axis inductance, so that it is possible to rotate and drive by making use of reluctance torque. Incidentally, the shape of the permanent magnet 14 may be a shape projecting in the middle portion toward the center of the rotor 13.

IN THE CLAIMS

Claims 2, and 5 through 24 have been cancelled.

Please replace claims 1, 3, and 4 with the following amended claims:

1. An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle,

a power supply unit for feeding electric power to said drive unit,

wherein said drive [element] unit includes a motor,

said motor includes a stator core, [having a plurality of teeth parts], said stator core has 3n teeth, where n is a natural number, a concentrated winding applied over each [teeth part of said plurality of teeth] tooth part[s] of said teeth, and

a rotor [incorporating] including 2n permanent magnets [a plurality of permanent magnets, and each of said plurality of permanent magnets is provided at a larger pitch than the stator coil pitch].

3. An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle, and

a power supply unit for feeding electric power to said drive unit,

wherein said drive [element] unit includes a motor, [and an engine]

said motor includes a stator core and said stator core has 3n teeth [having a plurality of teeth where n is a natural number, a concentrated winding applied over each [teeth] tooth part of said [plurality of] teeth, [parts] and

a rotor including a plurality of 2n permanent magnets, [and

each of said plurality of magnets is provided at a larger pitch than the stator coil pitch.]

said plurality of 2n permanent magnets are arranged around a shaft of said motor,

at least one of said plurality of 2n permanent magnets includes a magnet forward portion and a magnet backward portion, and

wherein said magnet forward portion is angled from said stator core towards said shaft such that a first end of said magnet forward position is closer to said stator core than a second end of said magnet forward portion, said magnet

backward portion is angled from said stator core towards said shaft such that a second end of said magnet backward portion is closer to said stator core than a first end of said magnet backward portion, said second end of said magnet forward portion being coupled to said first end of said magnet backward portion.

4. An electric vehicle comprising:

an axle,

wheels supported on said axle,

a drive unit for rotating said axle, and

a portion [power] supply unit for feeding electric power to said drive unit,

wherein said drive element includes a motor,

said motor includes a stator core and said stator core has 3n teeth [having a plurality of teeth parts,] where n is a natural number, a concentrated winding applied over each [teeth] tooth part of said [plurality of] teeth, [parts] and

a rotor including [incorporating] a plurality of 2n permanent magnets,

[said stator core is formed in an annular form by combining said plurality of core elements, and]

[each of] said plurality of permanent magnets [is provided at a larger pitch than the stator coil pitch] are arranged around a shaft of said motor, and

17 at least one of said plurality of permanent magnets has a side which
18 is angled from said stator core towards said shaft.

Claims 25 and 26 have been added.